

REMARKS

This application has been reviewed in light of the Office Action dated January 27, 2004. Claims 1-7 and 9-13 are presented for examination. Claim 8 has been canceled, without prejudice or disclaimer of subject matter. Claims 1, 5, and 13 have been amended to define more clearly what Applicant regards as the invention. Claims 1 and 13 are in independent form. Favorable reconsideration is requested.

The Examiner has objected to the drawings under 37 C.F.R. § 1.83(b) as being incomplete and insufficiently labeled. This objection is respectfully traversed for the following reasons.

First, it is unclear to Applicant why the drawings are thought to be insufficiently labeled. In each figure, the various elements discussed in the specification are labeled with reference numerals. In Applicant's view, the amount of labeling is sufficient to allow for an adequate description of the invention. Moreover, the Examiner has not specifically identified any shortcoming in the labeling or any other aspect of the drawings.

Second, the rule cited in the Office Action, 37 C.F.R. § 1.83(b), concerns drawings depicting "an improvement on an old machine." For example, the invention at issue in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966)¹, involved an old machine, e.g., a plow, with an improved portion, e.g., a spring clamp fixed to the plow frame to permit the plow shanks to be pushed upward when they hit obstructions in the soil. This invention therefore was amendable to being depicted "in one or more views. . . disconnected from the old structure" and "in another view, [with] so much only of

the old structure as will suffice to show the connection of the invention therewith,” as required by 37 C.F.R. § 1.83(b). By contrast, the present invention is an electronic device that, while constituting an improvement over the prior art, is not amendable to being characterized as “an improvement on an old machine.” Thus, 37 C.F.R. § 1.83(b) is inapposite and should not be used as the basis of an objection to the drawings of the present application.

Accordingly, Applicant requests reconsideration and withdrawal of the objection to the drawings. If the objection is maintained, Applicant respectfully requests that the Examiner “[s]upply a full explanation” as to why the drawings are incomplete. M.P.E.P. § 608.02(d)(Form Paragraph 6.22.04, Examiner Note 2).

Claims 5 and 8 were rejected under 35 U.S.C. § 112, second paragraph, as indefinite.

First, cancellation of Claim 8 renders the rejections of that claim moot.

Claim 5 has been amended to recite that the quantization error is fed back to several subsequent input values and is multiplied by a respective factor for each one of the several subsequent input values to which it is fed back. It is believed that the rejection under Section 112, second paragraph, has been obviated, and its withdrawal is therefore respectfully requested.

Claims 1, 2, 4, 5, 8, 10, 11, and 13 were rejected under 35 U.S.C. § 102² as being anticipated by U.S. Patent No. 6,496,128 (“Wiesbauer”). Claims 3, 6, 7, 9, and 12

¹ No cases have been found that even mention 37 C.F.R. § 1.83(b), so *Graham* has been chosen as a well-known example of an invention that is an “improvement on an old machine.”

² Although not specified in the Office Action, Applicant presumes that the rejection is being made under Subsection (a) of 35 U.S.C. § 102, since Wiesbauer does not qualify as prior art under any other subsection thereof.

were rejected under 35 U.S.C. § 103(a) as being obvious from Wiesbauer in view of U.S. Patent No. 4,893,650 (“Geen”).

The aspect of the invention set forth in Claim 1 is a method for analog-to-digital conversion of time-discrete analog input values by means of a quantizer, which is set up in such a manner that it provides an associated digital output value after conversion of an input value. After each conversion of an input value, a quantization error of the quantizer is determined in analog form by directly picking up the quantization error at the quantizer. The quantization error is fed back in analog form to at least a subsequent input value.

As described in the background portion of the specification, in connection with sigma-delta-modulators, eliminating quantization noise in analog-to-digital converters being operated in an oversampling mode by means of suitable filters is known and is referred to as “noise shaping.” It is also known to feed back the digital output signal of an analog-to-digital converter via a digital-to-analog converter in order to subtract the output signal from the analog input signal of the analog-to-digital converter. The difference between these signals corresponds to the quantization error of the quantizer integrated into the analog-to-digital converter. Wiesbauer is an example of such a prior art system.

As correctly pointed out in the Office Action, Wiesbauer relates to an oversampling, multi-stage, sigma-delta-modulator that has in each stage an analog-to-digital converter (10) having a quantizer used to digitize time-discrete analog input values. The quantization error of the Wiesbauer’s quantizer in the analog-to-digital converter (10) is calculated by means of an external digital-to-analog converter (15) and a subtractor (16) that calculates the difference between the analog input signal of the quantizer and the

digital-to-analog converted output signal of the quantizer. The quantization error is then supplied to the next stage of the multi-stage sigma-delta-modulator.

By contrast, the invention of Claim 1 is characterized in that the quantization error can be obtained much more easily and cost effectively. In this regard, Claim 1 recites determining a quantization error of the quantizer in analog form by directly picking up the quantization error at the quantizer. This feature is discussed, for example, in the specification at page 10, lines 10-11. Because the quantization error can be directly picked up at the quantizer, the invention of Claim 1 does not require additional, external digital-to-analog converter and subtractor elements similar to those used in Wiesbauer.³

For at least these reasons, Claim 1 is believed to be patentable over Wiesbauer.

Independent Claim 13 recites features similar to those discussed above with respect to Claim 1 and therefore is also believed to be patentable over Wiesbauer for the reasons discussed above.

A review of the other art of record, including Geen, has failed to reveal anything which, in Applicant's opinion, would remedy the deficiencies of Wiesbauer, as a reference against the independent claims herein. Those claims are therefore believed patentable over the art of record.

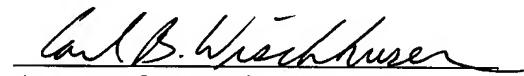
³ Applicant notes that the subtractor shown in Figs. 1 and 3 is merely conceptual and does not have a corresponding physical embodiment in practice (see page 10, lines 8-10 of the specification).

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual consideration or reconsideration, as the case may be, of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

Applicant's undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,



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